

## **Reflections on the Role of the Sussex Ironmasters in Elizabethan Glamorgan**

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By the middle of the nineteenth century the iron industry in South Wales was the largest in the world.<sup>1</sup> It had been founded centuries before in small iron-smelting furnaces which lay scattered around the Principality, but the amount of iron produced was very small, and often the furnaces were operated by farmers, especially in the Welsh valleys. During this early period all of the iron produced used wood charcoal as the reductant, and although this efficiently reduced the indigenous haematite ore to pig or sow iron, extremely large quantities of wood were required to produce the charcoal.<sup>2</sup> In England, large areas of woodland were decimated over time especially in the south-east of the country and, as a consequence an Act was passed in 1581 prohibiting the conversion of wood into charcoal for iron making within fourteen miles of the Thames, forbidding the erection of new ironworks within twenty-two miles of London and restricting the number of works in Kent, Surrey and Sussex.<sup>3</sup> The Act did not extend to those areas where coppicing was used extensively as a semi-renewable source of wood, but it seems that elsewhere entire woods had been destroyed. Up to 1580, some furnaces were using up to five loads of charcoal to make a ton of pig iron<sup>4</sup>, and in the Sussex furnaces, which collectively produced around 10,000 tons of iron at this time<sup>5</sup>, the annual consumption of wood would have been at least 325,000 tons.<sup>6</sup>

As a consequence of the deforestation in Sussex and Kent and the threat of impending legislation against the ironmasters (enacted in 1581), several of the ironmasters either moved their works or expanded their production by moving elsewhere. Some of them migrated to Glamorgan, because of the abundance of wood for making charcoal as well as the ready availability of good quality iron ore, and set up their forges, particularly in the heavily wooded valleys near Aberdare and Merthyr Tydfil. Among the first Kent and Sussex ironmasters who had interests in Glamorgan were Sir Henry and Sir Robert Sidney of Penshurst, East Sussex, William Darrell of Scotney, William Relfe of Mayfield, Anthony Morley of Glynde and Thomas Cheney of Cralle. In other parts of south Wales, important ironworks were established by Richard Hanbury, originally from Worcester, who had several furnaces at Pontypool, Monkswood near Usk, and also a wireworks at Tintern.<sup>7</sup> Although the iron trade of Sussex and Kent continued to exist until the middle of the seventeenth century, severe penalties were imposed for infringing the statutes, and during the civil war, works belonging to the royalists were destroyed. Most of the Welsh ironworks were also destroyed about this time, though new ones sprang up in similar locations during the next century owing to the presence of large quantities of coal and ironstone. In England, however, iron production rapidly declined and by 1740 there were only fifty-nine furnaces in England, of which ten were in Sussex. By 1788 there were only two remaining in Sussex and within a few years even these were closed completely.<sup>8</sup>

The renaissance of the iron industry in Wales in the eighteenth century followed the discovery that coke, derived from coal, could be used in place of wood charcoal as an effective reducing agent for the readily available iron ore. The ultimate success of this industry in Wales, nonetheless, owed much to the influx and influences of the early English ironmasters who had moved into the Welsh valleys. Previously, Llewellyn<sup>9</sup>, in his detailed and comprehensive account of the *Sussex Ironmasters in Glamorganshire*, has described the background and litigation surrounding the business affairs of Anthony Morley, one of the

earliest ironmasters who lived in Llanwonno, and his eventual bankruptcy and early death in the 1580s. These events have been re-described more recently by Rees in his monumental work on *Industry before the Industrial Revolution*,<sup>10</sup> and summarised by Williams in his account of *Glamorgan County History*.<sup>11</sup> Historically, it is known that iron was produced in the lower Taff valley at the Pentyrch Ironworks by William Mathew of Radyr as early as the 1560s.<sup>12</sup> A little later, these ironworks were taken over by Sir Henry Sidney, and by 1568, his forges in Glamorgan were producing around 130 tons of wrought iron per annum.<sup>13</sup> In another publication on the *Sussex Ironmasters in Glamorgan*, Bevan has described the activities of Sir Henry's son, Sir Robert Sidney, in the manufacture of iron at Coity near Bridgend in 1589 following his marriage in 1584 to Barbara Gamage.<sup>14</sup> She was heiress to John Gamage (lord of Coity), who owned heavily wooded lands extending from the southern slopes of a ridge at Cefn Hirgoed near Coity to Garth Maelog near Llantrisant which proved to be a valuable source of wood and charcoal for Sidney's ironworks. Bevan's paper also discloses that iron was produced at several sites in Glamorgan in the 1560s and reports, for example, that twenty one tons of plate were shipped from Cardiff to Rye in Sussex in 1565 (for Sidney's works at Robertsbridge<sup>15</sup>), and a further 80 tons in 1568. Iron was also shipped from Glamorgan to Ireland, and a total of 168 tons were sent to Dublin in 1569-70.<sup>16</sup>

In the present article, more details of the life and times of the early Ironmasters are discussed specifically in relation to the history of iron production in both Llanwonno and the Cynon Valley. Although Llewellyn's account includes the transcription of a number of the legal documents from the National Archives, which describe the litigation surrounding Anthony Morley, many other aspects of his affairs including details of his early life in Sussex and the location of his ironworks, have not been previously disclosed. Evidently, Llewellyn was not aware of the considerable additional material concerning Anthony Morley's bankruptcy present in the Bute archives at the National Library of Wales, nor was he aware of the role of John Morley, another very prominent Sussex man (who is not thought to be have been related to Anthony Morley), in the running of the ironworks (see later). While Llewellyn's account includes details of the genealogy of some of the Sussex ironmasters, he assumed that Anthony Morley had died at an advanced age<sup>17</sup> but this assumption is not true. The more recent account by Rees summarises some of the Bute documents but his account is poorly referenced and confused in several places. For example, he erroneously assumes that John Morley and also a William Morley were the brothers of Anthony Morley and he confusingly locates one of Morley's forge at Pontygwaith on the river Rhondda Fach instead of the river Taff.<sup>18</sup> There are many other inconsistencies and ambiguities in both Llewellyn's and Rees's accounts of this period of Welsh history, and this current review attempts to correct earlier errors and to elaborate further details of Anthony Morley's life before his move to Glamorgan and the events which followed his death. This account also reviews the role of other Sussex ironmasters in this part of Glamorgan and discusses the scale of production and cost of manufacturing iron at this time in South Wales. Before this aspect is examined, however, Morley's early life in Sussex is outlined to place his subsequent business affairs in Wales in the proper context.

## **The Morleys of Glynde**

Anthony Morley, who became an ironmaster in Glamorgan, was born at Glynde, near Lewes, in Sussex probably around 1535. His father, Thomas Morley and mother Elizabeth Maycott, who had married about 1532, had nine children who were all born at Glynde. According to the Glynde Place Archives<sup>19</sup>, Thomas, who was born around 1513 and died in 1558, owned an iron-mill or forge and a furnace at Hawksden Park in Mayfield<sup>20</sup> which lies about eight

miles due south of Tunbridge Wells. The Morleys took part in the boom in the Wealden iron industry in the mid-sixteenth century and in 1548/9 Thomas was appointed as a commissioner on the iron industry. Bindoff reports that Thomas was returned as MP for Arundel in March 1553.<sup>21</sup> Anthony, his second son was apparently the only one of his descendants to engage directly in the iron trade; the later Morleys preferred to lease their forges to other ironmasters. Thomas Morley appears to have acquired Hawksden forge and furnace at Mayfield from around 1552, as prior to this it was operated by his uncle, Anthony Pelham, using French workers.<sup>22</sup> Some time after Thomas Morley's death, Hawksden appears to have been leased out, as a Richard Green is listed as the occupier in 1574. Thomas's son, Anthony Morley, acquired a forge at Freshfield, Horsted Keynes and leased a furnace also at Horsted Keynes owned by Sir William Barrantyne, which was still operating in 1667.<sup>23</sup> Anthony later sold Freshfield Forge, as a John Cowper is reported as the owner in 1602.

The will of Thomas Morley, dated 10 January 1558, provides some interesting details on the early life of Anthony Morley, his five brothers and three sisters.<sup>24</sup> In his will, Thomas appoints his first son, William, as his executor and charged him to maintain his brothers Thomas, Edward and Ralph at school until the age of twenty. It follows that Thomas, Edward and Ralph were born after 1538 and places the birth of the other brothers, William, Anthony and John earlier, probably around 1533-1537. The will bequeaths Anthony Morley an annuity and appoints him as his executor in the event of William's death before the will is proved, indicating that he was at least 21 years of age at this time. A number of items are bequeathed to his wife, and £40 to his daughter Anne on her marriage (to Anthony Stapley – see later).

Anthony almost certainly spent his early life in the family home at Glynde. However, following the death of his father in 1559, Hawksden Forge and Furnace at Mayfield was passed on to his brother, William Morley, along with the Glynde estate. William was responsible for building the existing mansion of Glynde Place (Figure)<sup>25</sup>, which was erected in 1569 on the site of the earlier house.<sup>26</sup> Anthony was educated at the Inns of Court in London and entered Gray's Inn on the 18 October 1556 though he did not proceed to be called to the bar.<sup>27</sup> At this time, the four Inns of Court provided a general education for gentlemen rather than legal training.<sup>28</sup> Thomas Morley's will bequeaths Anthony £10 a year to be paid by his executors to maintain him at the Inns of Court for three years, implying that Anthony may have spent around five years at Gray's Inn from 1556 to 1561. Anthony's nephew and namesake Anthony Morley (his brother William's son, born ~1570) also attended Gray's Inn for around five years as he was admitted on 9 February 1590 and was still resident at Gray's Inn in 1595.<sup>29</sup>

It is not known with any certainty where Anthony lived after he had completed his education at Gray's Inn. However, there is evidence to suggest that shortly after he left Gray's Inn, perhaps in 1561-2, he married Johanne Fenner<sup>30</sup>, who was the widow of Edward Shurley of Isfield Place who had died on 16 March 1558<sup>31</sup>. This was possibly a marriage of convenience, as Anthony was about 26 years old at this time whereas Johanne would have been at least 42 years old with four children, some of whom were still dependent on her. A financial transaction at Buxted in Sussex dated the 26 November 1562 identifies Anthony Morley as a gentleman from Isfeld (Isfield) indicating that he had moved there after his marriage to Johanne Fenner.<sup>32</sup> The church records at Isfield also show that he and his wife were clearly present there in 1570<sup>33</sup>.



**Figure. Glynde Place, East Sussex**

Anthony Morley is mentioned several times in the Glynde Place Archives where he was involved in a number of legal transactions either as a witness or as a party in the action. In 1569 he was a witness to the second marriage settlement of his eldest brother William, and in the latter's will of 1573, Anthony is appointed as one of the overseers and managers of William's lands until his children became of age.<sup>34</sup> Around this time it is thought that Anthony's first wife had died because it is known with certainty that he married Bridget Michell and they had four children (see below). It seems highly likely that Anthony inherited some of Johanne's assets following her death, though Isfield Place belonged to her son, Thomas Shurley. Later in 1578, Anthony acted as an arbitrator in a property dispute in Fletching<sup>35</sup>, and by 1579, he appears to have moved to Lindfield, now part of Hayward's Heath and about 20 miles northwest of Glynde. Here there is a record of a bond transaction for £300 between him and Giles Garton, a prominent London ironmonger, concerning the delivery of 15 tons of English iron 'well drawn into barres' on 12 November 1579 at the shop of widow Adames at Lewes Bridge.<sup>36</sup> At this time, Anthony was operating Freshfield Forge and a furnace at Horsted Keynes.

It is thought that Anthony Morley married Bridget(t) Michell (also spelled Mychell) about 1576, and they probably lived in Sussex until at least 1579 in view of the transaction referred to above. Bridget had at least two brothers, one called John (the eldest son) and the other called Edmund, who both became involved in Anthony Morley's business affairs in Glamorgan (see later). The Michell or Mychell name is well established in Sussex at this time with many references to this family in the National Archives and elsewhere.<sup>37</sup> The available evidence suggests that Anthony and Bridget Morley had only four children, Herbert, William, Margaret and Ann, who were probably born either in Sussex or Glamorgan between 1576 and 1582<sup>38</sup>; sometime during this period it is believed the family moved to Glamorgan. At the time of his marriage Anthony, who was a well-educated gentleman, would have been around forty years old and his wife around twenty seven years old. The reasons for Anthony's move partly lay with the impending Act of Parliament discussed earlier which had already led other

ironmasters such as William Relfe and William Darrell (sometimes spelled Darell) to move at least part of their iron production to Glamorgan.

### **Anthony Morley's Affairs in Glamorgan**

One of the earliest references to the activity of the Sussex ironmasters in north Glamorgan comes from an undated Bill of Complaint (thought to be 1572) issued by an Edward Lewis against Jeavan Howell, William Relfe and William Darrell and in which he alleges that they had deprived him of his rightful lands, a water mill and tenements in Llanwonno which he was entitled to as an inheritance from his deceased grandfather, Ryse (or Reece) ap Morgan, who had died in 1564.<sup>39</sup> This claim arose because Edward's father, Lewis (ap) Ryse, had pre-deceased his father, Ryse ap Morgan leaving Edward, the only son (who was a infant at the time of his grandfather's death) as the legitimate heir. In his action, Edward claims that after his grandfather's death (which he says was about eight years prior to the date of his petition), the defendants had entered his lands and one of his tenements with force and ejected him. Furthermore, they had stopped and diverted the flow of water to a grist mill and erected an iron furnace with trenches and ditches there which had resulted in the utter destruction of woods, meadows, pasture and arable land. In his written defence, William Relfe refuted the accusations stating that he had regularly paid an agreed rent of £5 13s. 4d. per annum for a lease on the property which had been acquired by Jeavan Howell by a deed from Reece ap Morgan dated 17 February 1564. Morgan died shortly afterwards and it is thought that Relfe and his associates seized control of the lands, constructed the furnace a few years later and subsequently built or acquired two forges for processing the cast iron into wrought iron. The result of this action is not known, but the fact that Relfe and his partners were still holding the land and furnace at the time of his death about 1582 (see later) suggests that it was either unsuccessful or that they had agreed to compromise.

The Llanwonno blast furnace appears to have been among the first erected in South Wales though it was clearly constructed a few years after the furnaces sited at Pentyrch, Tongwynlais and Monkwood, near Usk, which all dated back to the early 1560s.<sup>40</sup> The Penrtyrch furnace which was two thirds owned by William Mathew of Radyr, was sold along with a forge that he owned in Llanwonno (Llanwynno), to Sir Henry Sidney and his associates in 1565.<sup>41</sup> The site of Mathew's forge has not been established at the time of writing (but see later).

Anthony Morley appears to have acquired Howell's share of the undertaking in Llanwonno possibly as early as 1575 though he was still living in Sussex at this time. This information is conveyed by John Morley who was an accountant and a solicitor resident in Glamorgan in the 1570s. He reports that William Darrell, William Relfe and Anthony Morley were the owners of two forges or Iron works in Llanwonno.<sup>42</sup> The forges, as well as a furnace which belonged only to William Darrell and William Relfe, were operated initially at least by an Edward Cavell, from Sussex, who had hired workers and ran the operation for three or four years until his death in Glamorgan in 1579. During this period, John Morley, acted as the paymaster for the three ironmasters, and was also responsible for settling the personal and business affairs of Edward Cavell in Wales following his death. Shortly afterwards, however, Edward's sister and heir, Joane Arnold, issued a bill of complaint against William Darrell and John Morley, alleging that they had acted improperly as executors of Edward's will and that she was owed money (see later).

To fund his share of the forges, lands and tenements in Glamorgan it seems likely that Anthony Morley had sold all his assets in Sussex by 1579 and later acquired the Relfe interest in Glamorgan either a short time before or after William Relfe's death in 1581-2.<sup>43</sup> According to Llewellyn (and re-told by Rees), Anthony's widow claimed that Anthony was well-off initially as he owned freehold lands, tenements and houses worth some £200-£300, and leases on woods and forests worth around £400-£500 in the parish of Llanwonno. He owned iron works and forges in the parishes of Llanwonno and Merthyr Tydfil together with tools and equipment which were worth at least £1000 according to the petition.<sup>44</sup> Nevertheless, because of bad debts and other casual misfortunes, he owed his creditors around £500 and was unable to make payments. His creditors included Constance Relfe (the widow of William Relfe and daughter of Thomas Cheney), William Mathew of Radyr JP, Nicholas Chatfield, John Vine and others, and they presented a petition and bill of complaint to the then Lord Chancellor of England, Sir Thomas Bromley, declaring that Morley was indebted to them for a substantial sum, that he had become bankrupt and had absented himself. They requested that a commission be appointed to sell his possessions to pay off his debt.

Llewellyn's account of the bankruptcy (repeated by Rees) continues by stating that a commission was subsequently appointed by the Lord Chancellor, led by Sir Edward Stradling, and that on 18 May 1586 all of Anthony Morley's interests were sold to Thomas Meneffee (also spelled either Myniffe, Menyffe, Mynefee, Mynyfe, or Menefie) of Glamorgan for £989 4s. 8d. After payment of all his creditors and legal expenses, there was a surplus of around £320 remaining. The commission ordered Thomas Meneffee to pay Anthony Morley and his family an annuity of £40 for eight years in lieu of the surplus realised from the sale his assets. However, both Anthony and Thomas Meneffee died within three years of making the agreement and, although it was claimed that Anthony may have received an initial payment of £43 13s. 4d. from Thomas Meneffee, no further payment had been received in subsequent years because Meneffee had died.

Sometime in 1588-9, Bridget Morley had remarried to her late husband's associate, John Watkis, and because no payments had been forthcoming from the Meneffee estate by November 1589, they, together with Bridget's brother, Edmund (or Edmond) Michell, who had loaned her money, presented a petition to the new Lord Chancellor of England, Sir Christopher Hatton, demanding that Thomas Meneffee's wife, Elizabeth, honour the annuity arrangements.<sup>45</sup> In her reply to the petition, Elizabeth pleaded ignorance of the annuity arrangements that her husband had made with the Morleys but, recognising her obligations offered to pay Bridget and her four children the sum of £273 6s. 8d. (not £723 6s. 8d. as reported by Rees, though this is almost certainly a simple misprint in his review) which represented the outstanding balance from the original £320, less the sum which she claimed had already been paid.<sup>46</sup> The initial payment was strongly contested by Bridget and, as there was no agreement between the parties, a further commission appears to have split the difference and awarded Bridget £298. This sum was to be paid as an initial lump sum of £80 on 2 February 1590, £58 on 1 May 1590, and £40 yearly thereafter on 1 May for a total of four years. The payments were to be made at the great stone in the High Street of Cardiff between the hours of noon and 4pm but none were ever made (see later).

Following her husband's death, Bridget Morley had borrowed several sums of £20 (a total of £140 and not £240 as stated by Rees) from her younger brother, Edmund Michell, (also referred to erroneously as Edward in the Chancery documents) to keep her solvent, using her annuity from Meneffee as security with the understanding that she would pay back the sum borrowed from the £40 annual payment.<sup>47</sup> Edmund who lived at Weston,



Herefordshire (possibly Weston under Penyard, near Mitcheldean in Gloucestershire on the northern fringes of the Forest of Dean) may have been an ironmaster also. It is not known why Bridget needed such a substantial sum of money, but her family had vacated their house and the grounds belonging to the ironworks, and possibly she needed the money to purchase a house and to provide education for her children. Confusingly, John Michell, Bridget's elder brother, was also owed money, but in his case, this was for a loan he had made to Anthony Morley at the time the latter was establishing his business venture in Glamorgan. The sum involved, thought to have been £60, was part of the capital outlay that Thomas Meneffee had made to secure Morley's assets.

However, the purchase of Anthony Morley's assets by Thomas Meneffee was not straightforward. Both Llewellyn's and Rees's accounts imply that Meneffee first bought out Morley's assets in their entirety for £989 4s. 8d. and then subsequently purchased Constance Relfe's share of the ironworks, tenements, lands and implements for £600. This does not appear to be true, and this account suggests that part of Morley's interest in the ironworks in Llanwonno reverted back to Constance Relfe's estate following his bankruptcy. As stated earlier and according to Elizabeth Meneffee, Morley's assets were valued by the commission at £989 4s. 8d. leaving a surplus of £320 after the creditors had been compensated. It follows that Morley owed only £669 4s. 8d. to his creditors and the reasons why the commission decided to sell all of his assets is not disclosed in the available documents. Of this debt, £65 was owed to William Mathew, £44 4s. 8d. to Nicholas Chatfield, £100 to John Michell (Morley's brother-in-law) and £60 to John Vyne (not Constance Relfe as stated by Rees).<sup>48</sup> A close analysis of one of the important Bute documents, shows that the bulk of Morley's debt was owed to Constance Relfe for her grant to him in 1581-2 of a third part of two forges, a furnace and some other items, owned originally by William Relfe her husband, by then deceased.<sup>49</sup> This grant was dependent on Anthony Morley paying her £100 a year rent, but he had paid her nothing for four years and she was owed £400. Collectively, all of these amounts add up to the value placed on Morley's debts of £669 4s. 8d. and at some point, probably in 1585, she along with the other creditors sought reparation from the commission headed by Sir Edward Stradling. Although the commission assigned payments to the creditors over a period of eight years<sup>50</sup>, there is strong evidence to suggest that none of these were ever made. For example, most of Morley's assets appear to have reverted to Constance Relfe after his bankruptcy and Meneffee paid off most of William Mathew's debt later.

Meneffee subsequently paid Constance Relfe a total of £600 for her estate, but unfortunately, he did not receive the appropriate deeds, leases and other documents relating to the forges or properties for which he had paid. After his death, his widow, Elizabeth Meneffee, who had subsequently married Robert Martin (also spelled Martyn or Martine in other manuscripts) of Aberdare around 1589, petitioned Sir Christopher Hatton on 16 October 1590 to force Constance to hand over the deeds/leases.<sup>51</sup> In reply, Constance, who by now had married James Hobson, denies that there was any agreement between her and Thomas Meneffee that she should hand over the documents requested. She further denied that she had detained any of the writings/evidences as alleged by Elizabeth. This acrimonious dispute between Robert Martin and Elizabeth (formerly Meneffee) his wife, (the complainants), and James Hobson and Constance (formerly Relfe) his wife (the defendants) was further pursued in the Court of Requests at St Nicholas in Glamorgan on 24 September 1591 before Thomas Wiseman and Griffith Williams (the commissioners).<sup>52</sup>

This important case, which has been discussed only briefly by Rees, describes the examination of six expert witnesses in connection with the bankruptcy of Anthony Morley

and the sale of his assets and sheds new light on the events which occurred in Llanwonno in 1585-90. The witnesses called were: (1) William Wells of Cardiff, a mercer or dealer; (2) Richard Austen of Aberdare, a yeoman and former clerk to Thomas Meneffee; (3) Robert Monke of Aberdare, a yeoman and chief clerk and dealer to Thomas Meneffee; (4) Humffrey (Humpfrey) Ellys of Bristol, an ironmonger; (5) Tom Howell of Aberdare, a yeoman and solicitor for Thomas Meneffee; and (6) Thomas Mathew of Llanwonno, a finery (forge) man.

The accounts of the witnesses broadly agree but some are more detailed than others. It is not known how Thomas Meneffee became involved in the bankruptcy hearings against Anthony Morley but he clearly acted on behalf of Constance Relfe and the other creditors.<sup>53</sup> Richard Austen states that Thomas Meneffee was *a stranger* in Glamorgan, and that he was not able to pursue the action against Morley without the help of William Mathew of Radyr JP, after paying him a sum of £60 which was probably compensation for the amount Anthony Morley owed him.<sup>54</sup> Meneffee was evidently a wealthy man and possibly came from Devon as his surname was common there<sup>55</sup>, though Rees states in his account that he came from Aberdare-Radyr. The proceedings by Meneffee against Morley appear to have started about the 10 February 1585 and litigation concerning his assets continued until 23 April 1589 which cost Meneffee £70 18s. 8d. according to Robert Monke.<sup>56</sup> At the beginning of the proceedings Morley was in prison and he may have remained there until his bankruptcy had been discharged.<sup>57</sup> Bankruptcy was considered a serious crime in Elizabethan times and the stigma associated with it may have contributed to Morley's early death aged about fifty one years. According to Austen, Meneffee appears to have paid twenty shillings a week for seven weeks initially to Bridgett Morley and her children followed by a sum of £30 12s. 11d. while Morley was in prison. Overall Meneffee claimed to have paid out £77 6s. 3d. for the maintenance of Morley's family during this period, which presumably included the first instalment of £40 ordered by the commission.

All the witnesses agree that following the bankruptcy proceedings, which probably took place from 1585 to 1586, a commission headed by Sir Edward Stradling ordered that all of Morley's assets were to be sold to pay off his debts. These assets included a share in two forges (later referred to as the 'Old Forge' and the 'New Forge'), a furnace and all implements, wood, stock, together with a farm called Penbough (in the parish of Llantrisant) and a tenement called New Town (possibly the original site of the existing village of Newtown near Mountain Ash).<sup>58</sup> Llewellyn suggests that the farm called Penbough was probably the anglicized version of the place Penbwch where he claims the remains of an ancient ironworks existed though he presents no supporting information. It is more likely that this farm was a renewable source of timber for the furnace and forges in Llanwonno as one of the petitions states that Constance Relfe owned leases on the 'farm of Penboughe in the p[ar]isshe of Lantrissy in the saide countye of Glamorgan and of the woods growinge and renuinge in and uppon the same'.<sup>59</sup> Interestingly, Humffrey Ellys states that he had made several journeys to London and Sussex for Meneffee and had brought the commission from London.<sup>60</sup> This strongly suggests that Meneffee may have influenced their decisions on the value of Anthony Morley's estate. Austen also states that Meneffee did not occupy or possess the farm or the tenements that he had obtained from the sale of Morley's assets during his lifetime, as the former was occupied by a David Morgan and the latter by a Lewis ap Owen; both claimed a title to their properties by virtue of a grant from Anthony Morley. All of the other witnesses concur with this account. In addition, Meneffee was deprived of one third part of a wood which he had also obtained from the sale as a Lewis Lloyd (also spelled Ffloyd and Lloid) claimed a right to it and Meneffee was forced to pay him £10 in compensation (not £115 as reported by Rees).



Morley is thought to have died about November 1586.<sup>61</sup> It is not at all clear why Morley failed to pay his creditors as the furnace and forges were operational around the time he died and almost certainly profitable. In the original petition, his wife states that payments to his creditors had fallen behind because of bad debtors and other casual misfortunes. This suggests that he had not been paid for the iron he had produced possibly because of difficulties with his customers. Meneffee died a few years after Morley, probably in late April 1589<sup>62</sup> as there is a record of a payment directly to him in March that year and then one to his executors in April<sup>63</sup>. Another document confirms that he was alive in March that year.<sup>64</sup> The causes of their deaths are not known.

### **The Dispute between John Watkis and Thomas Meneffee**

After John Watkis had married Bridget Morley, they, together with Edmund Michell had apparently succeeded in their case against Elizabeth Meneffee for maintenance payments, but according to Austen, Watkis would not, and did not allow, any of the £40 per year awarded to be paid, probably because he considered that the commission had made an egregious error in their estimation of the value of Morley's assets.<sup>65</sup> Consequently, Watkis sued the original Commissioners and Elizabeth Meneffee in the High Court of the Chancery because he asserted that *all* of Morley's assets had been sold to Meneffee even though his debts did not necessitate the complete sale. Furthermore, it appears that they were sold for less than their worth which Watkis 'did thinke to be a greate wronge donne .....and thoughte to have remedie therefore in equitie'. This statement strongly suggests that Watkis was seeking redress through the return of some of Morley's assets. However, his claim was rebuffed initially by Elizabeth Meneffee and then later by her new husband Robert Martin in several suits during the period from 4 March 1589 to 24 June 1591. The result of Watkis's action is not known, but Meneffee's claim to the forges was contested not only by John Watkis (see above) but also by John Michell, the elder brother of Bridget Morley, who had loaned her husband money. It is not known what part of the country John Watkis came from, but he is referred to as John Watkins in Llewellyn's account and as John Watkeys in Rees' account.<sup>66</sup>

Austen, Monke and Howell state that although Meneffee was entitled to a third part of the Old Forge, which was located in Glyn Cynon, from 12 of October 1585 until 5 September 1587 he was harassed by John Watkis and Richard Waters who were in possession of the other two thirds of the forge.<sup>67</sup> Austen also says that from 12 October 1585 to 10 June 1586, Meneffee could not occupy his third part of the other forge in Llanwonno as John Michell, Morley's brother-in-law, kept possession of it on his own behalf and on behalf of William Morley (Anthony's first son but not his brother as reported by Rees) and Anthony Stapley.<sup>68</sup> This suggests that Morley had either absconded<sup>69</sup> or had been imprisoned by this time.<sup>70</sup> Stapley, who was born in Framfield, Sussex about 1537, was one of Anthony Morley's contemporaries who had married his sister Ann Morley around 1564<sup>71</sup> and was also (presumably) owed money. However, it seems that John Michell and Meneffee subsequently came to an agreement where the latter paid the former £60 to settle his claim.<sup>72</sup> Rees's account conveys some of this information but makes the puzzling point that in 1585 (unequivocally written numerically in the Bute document), Meneffee did not own the forges and therefore would not have had any rights to them. Nonetheless, according to Monke, the proceedings by Meneffee against Morley appeared to have started about the 10 February 1585 and litigation concerning his assets continued until 23 April 1589 and cost Meneffee £70 18s. 8d.<sup>73</sup> When asked how he knew this, Monke stated that he 'he drewe and did write him selfe some p[ar]te of the saide monies so disburssed keepinge a recorde thereof'.

Austen's intriguing account continues by stating that by 20 November 1586, Meneffee had paid Constance Relfe most of the agreed money for the forge, but on that day John Watkis forcibly expelled him along with all his workers and servants from the forge using thirty armed men and took possession of the whole forge.<sup>74</sup> Watkis also seized thirty tons of sow iron and nine tons of wrought iron from Meneffee at the forge and held them until 7 February 1587. This testimony is supported by Robert Monke and Thomas Mathew. Overall, it seems Meneffee lost in the region of £100 and more over the two years.<sup>75</sup> Subsequently, Meneffee sued John Watkis and his 'rioteuse companie' in the High Court of the Star Chamber for preventing him occupying his part of the forge and for his losses. However, John Watkis obstructed Meneffee's suit in the Star Chamber by countersuing him before the Council in the Marches of Wales. No records of these proceedings appear to have survived.<sup>76</sup> This legal dispute appears to have dragged on for some time, proved expensive for Meneffee and was further exacerbated in July 1587 as John Watkis seized 560 cords of ready cut wood from a wood called Fothokedye and also twenty wagon loads of charcoal which Meneffee needed to stock the Old Forge, claiming the right by a grant from Anthony Morley.<sup>77</sup> Eventually Meneffee agreed to resolve the dispute by giving Watkis eleven and a half tons of iron worth £115 and also agreeing to write off his losses of £110. Watkis, in turn, recognized Meneffee's right to the third part of the Old Forge at Glyn Cynon and also the wood called Fothokedye.<sup>78</sup> This version of events is supported by both Robert Monke and Tom Howell.<sup>79</sup> Rees's account conveys part of this information.

The payment of £600 to Constance Relfe by Meneffee for the ironworks, woods and property was not straightforward. It seems that Meneffee had missed a £50 instalment due in 1587 which his widow Elizabeth, and her new husband Robert Martin, were forced to honour and finally pay with interest (£68) following the arbitration of John Morley<sup>80</sup>; Humffrey Ellys confirms this account and says he was present at the payment.<sup>81</sup>

Elizabeth and Robert Martin were involved in another court action this time by Marmaduke Mathew, illegitimate son and heir of William Mathew of Radyr mentioned above, who claimed that his father also had an interest in a forge (possibly the Old Forge) in Llanwonno and six acres of land which he had leased to Meneffee in 1587 for 21 years at an annual rent of two tons of bar iron for the first seven years and one ton thereafter. Following Meneffee's death, it seems that no rent had been paid to Mathew and he therefore pursued the Martins for payment.<sup>82</sup> The outcome of the case is not known

## **The Payment of Morley's Debts**

Following the death of William Relfe in 1582, Constance his wife was awarded his third part of the ironworks which he owned in Glamorgan by a Mr Appesley and she in turn granted her share to Anthony Morley as described earlier. However, these assets appear to have reverted back to her after his bankruptcy in late 1585, because the transfer *had been conditional* on Morley paying her £100 per year rent which he had failed to do for four years and she was owed £400.<sup>83</sup> It is assumed therefore, that the assets were returned to her in lieu of the sum that was owed. This appears to be confirmed in one of the later actions concerning the ownership of Meneffee's assets where it is unambiguously stated that Constance Relfe was then possessed of a third part of certain iron forges, furnaces and ironworks in Llanwonno which were 'late in the tenure occupac'on or possession of one Anthony Morley gent. Richard Waters and John Watkis'.<sup>84</sup> This statement suggests that Waters and Watkis were the co-owners of the assets. Waters is an English name and it is possible that he came from

Sussex also, perhaps from Heathfield, as there are records of two Richard Waters born there in 1589 and 1621.<sup>85</sup> On 10 February 1586, Relfe then sold on her share of the ironworks to Meneffee for £600.

Confusingly, John Morley relates that in the 1570s, William Darrell, William Relfe and Anthony Morley were the co-owners of two forges or ironworks in Llanwonno though the furnace which supplied them belonged only to William Darrell and William Relfe and all were operated initially by Edward Cavell, as stated earlier. The fact that Anthony Morley later took on Relfe's interest in the forges and furnace, suggests that he would have then owned a two thirds share in the forges and a 50% share in the furnace, together with land, property and leases he held on woods which supplied the charcoal for the furnace and forges. These items presumably included all his goods, his house and grounds (which had been vacated by his wife), the farm called Penbough in the parish of Llantrisant which contained the woods needed for charcoal production and two thirds of the tenement called Newtown.

However, in 1589, John Morley, who was then living in Llanwonno<sup>86</sup>, paid Thomas Meneffee a third part of the profit of the ironworks which seems to have been a regular payment to him.<sup>87</sup> The Bute document states that 'in the laste accompte made betwene Mr Mynyfe [and] Mr Morley the 30<sup>th</sup> of marche 1589 ye same Mr Morley dyd yelde unto hym in the same the full p[ro]ffitt of a thynde p[ar]te accordenge to his grante'. This seems to suggest that Meneffee had acquired only *a one third share* in the forges and furnace around 1586 and not as implied above and also in both Llewellyn's and Rees' accounts which suggest that Meneffee had purchased both Morley's one third share *and* Relfe's one third share which would have given him a two thirds share. Furthermore, Austen states that Constance Relfe 'did grannte unto the said Thomas Meneffee the thynde p[ar]te of two fforges, one ffurnace, and all man[er] of of woodes, stocke, implem[en]ts and ev[er]ie other thinge and thinges to the said thynde p[ar]te belonging'.<sup>88</sup> On the other hand, Ellys, who at the time dwelt with Meneffee, states that the commissioners sold to Thomas Meneffee all the goods, chattels, lands and tenements of Anthony Morley for the payment of his creditors.<sup>89</sup> This information suggests that Morley's original investment in the ironworks in Llanwonno (as described by John Morley) was possibly only in freehold land, leases, woods and property including a two thirds part of the tenement called New Town and the farm called Penbough. His share of the forges and iron works were clearly acquired from Constance Relfe but returned to her after his bankruptcy.

## **The Role and Identity of Other Ironmasters**

John Morley, who lived in Llanwonno, appears to have played an important role as a lawyer, adjudicator and accountant in the iron trade in Glamorgan from at least 1578.<sup>90</sup> For example, he had settled the affairs of Edward Cavell in the late 1570s in Glamorgan and he was responsible for the ironworks accounts in the late 1580s as stated earlier. He was an adjudicator in a dispute between a John Ramesden and Bartelmew Mascall concerning the production of cast iron at a furnace<sup>91</sup> (see later), but there are few clues to his identity. The possibility that he was Anthony's younger brother from Glynde or indeed his son (as proposed by Rees) cannot be discounted, but none of the petitions or other documents allude to this fact. Indeed, while the Glynde Place Archives identify him as Thomas Morley's third son in a land transaction in near Glynde in 1554<sup>92</sup>, his possible role as a witness in a settlement between his eldest brother William and Harbert Pelham and Thomas Coxe again near Glynde in 1586<sup>93</sup> suggests that he was not involved in Glamorgan. Furthermore, if the person living in Glamorgan had been Anthony Morley's brother, it seems inconceivable that

he would not have helped him or his sister-in-law Bridget Morley in some way during the bankruptcy proceedings and therefore been mentioned somewhere in her petition.<sup>94</sup>

Nonetheless, there is little doubt that the John Morley in Glamorgan at this time was English rather than Welsh. This information comes from the bill of complaint issued by Edward Cavell's sister and heir, Joane Arnold, who lived at Heathfield in Sussex, concerning Edward's estate in which she claims that she had been deprived of her rightful legacy by a will which he supposedly made in 1578 or 1579.<sup>95</sup> In her bill of complaint, which concerns the sum of around £50 which Edward Cavell was allegedly owed by William Darrell and John Morley at the time of his death for making iron for them in Glamorgan, the statement 'the said William Darrell and the said John Morley, (beynge bothe at that tyme in Wales)', suggests that both were known to her and perhaps lived near to the iron-making centre of Heathfield where William Relfe owned a furnace. There seems little doubt that the William Darrell referred to here is the person who was born in 1538 at Scotney Manor in Lamberhurst, Kent.<sup>96</sup> He was the son of Thomas Darrell who owned a furnace in Kent, and nephew to both Christopher and George Darrell who owned ironworks in Surrey<sup>97</sup>; all three brothers were born at Scotney Manor about 1516, 1520 and 1524 respectively and were the sons of Thomas Darrell and Elizabeth Horne. Unlike Anthony Morley and his father Thomas, who were both ironmasters, the Darrell family leased out their ironworks to other ironmasters and this seems to have been the pattern with William Darrell also as he was essentially a sleeping partner in the Glamorgan venture.

The genealogy of William Relfe, the other Sussex ironmaster involved in Glamorgan, is well known and described comprehensively by Llewellyn.<sup>98</sup> He was married to Constance Cheney who was the daughter of Richard Cheney of Cralle, another prominent Sussex ironmaster. The identity of John Morley is more problematical as there were several prominent people with this name alive at the time in Sussex. At the time of Joane Arnold's action against John Morley and William Darrell around 1580-82 she implies that they had been in Wales in the 1570s and may have returned to England. The Bute Archives clearly state that John Morley was a resident in Llanwonno by 1590<sup>99</sup> and had probably lived there or lodged there several years earlier than this as he was responsible for the ironworks accounts from the 1570s. The possibility that he was John Morley of Rotherfield in Sussex is supported by his birth in the right era about 1540, but the death of this person in Rotherfield about 1608 makes this unlikely although this was an iron making area. Furthermore, his children were born between 1568 and 1581 at Rotherfield and his will makes no mention of any ironworks or Glamorgan.<sup>100</sup> Neither John Morley of Michelham, who was involved in several transactions around 1584 in Sussex<sup>101</sup>, nor John Morley of Halnaker, later Sir John Morley, who was involved in various transactions in the period 1587 onwards<sup>102</sup>, appear to be the person who lived in Llanwonno because their lives are reasonably well documented in Sussex during the period the said John Morley resided in Glamorgan. The affairs of John Morley of Lewes, who was born around 1530, are also reasonably well documented, and records show that he at least was known to be involved in the iron trade, shipping iron from Hastings to Southampton in 1551 and 1552.<sup>103</sup> He was returned to Parliament as an MP in 1554 and at this time he was serving his first term as Constable of Lewes. Unfortunately he died at a young age in 1564-5<sup>104</sup>, and he was therefore not the person in Glamorgan. However, his will names his first son John Morley, as his sole executor<sup>105</sup>, and it is possible that he may have been the person who moved to Glamorgan as he would have been born in the right era about 1551.

## **The Dispute between John Morley and Robert Martin**

In one of the Bute documents, it is reported that John Morley did not accept that Thomas Meneffee had paid fully for the third part of the two forges and furnace owned by Anthony Morley and consequently he believed that Robert Martin's title to them (which was based on his marriage to Elizabeth Meneffee) was invalid.<sup>106</sup> In this account, it is stated that after Constance Relfe had granted her estate to Anthony Morley around 1581-2, he had apparently conveyed it to Richard Waters, before he in turn, finally transferred a third part to Thomas Meneffee without apparently mentioning the original grant to him. It appears that Meneffee had not fully paid for a one third share of the estate and consequently in John Morley's opinion, Robert Martin of Aberdare had no right to the third part of the New Forge but had title only to the third part of the estate including the Old Forge and furnace.<sup>107</sup> It is not apparent from the available information how Meneffee paid Morley's creditors, but as stated earlier, he had apparently paid £600 in total to Constance Relfe for her estate, probably in instalments, as £50 was outstanding in 1587.<sup>108</sup> This suggests that in John Morley's opinion, the £600 Meneffee had paid, was insufficient to cover all of Anthony Morley's assets which were controlled by Waters. Controversially, after the death of Thomas Meneffee, John Morley took possession of the third part of the New Forge on the 28 April 1590 until February 1591, claiming the title to it, though it not clear what rights he had to it.<sup>109</sup> However, in the bill of complaint issued against William Darrell and John Morley by Joane Arnold concerning the affairs of her brother, Edward Cavell, John Morley states in his reply as defendant 'that after the reckoninge between the said William Darrell and the said Edward Cavell he the said William Darrell didd assigne over his parte of the said fornace forges and ironworkes to this def[endan]t'.<sup>110</sup> Afterwards Cavell worked solely for Morley who then paid him for his labour.

Following the acrimonious dispute between John Morley and Robert Martin concerning the ownership of the New Forge, they both signed a memorandum on 11 December 1590 agreeing to the binding arbitration of Thomas Wiseman of Cardiff over the ownership.<sup>111</sup> In his judgement, reported also by Rees, Thomas Wiseman awards John Morley the full rights to the New Forge while confirming Robert Martin's rights to the ownership of the Old Forge.<sup>112</sup> The judgement orders John Morley to deliver to Robert Martin seven tons of iron drawn into bars by 7 January 1591, another seven tons by 7 January 1592 and a further eight and a half tons by 24 August 1593. The price of bar iron in the period 1584-95 is reported to have been around £10 per ton in Sussex<sup>113</sup> and also the same price in Glamorgan (see later) indicating that the twenty two and a half tons to be given to Robert Martin would be worth about £225. Furthermore, Thomas Wiseman orders Robert Martin to deliver 120 tons of sow iron to the New Forge between 17 of November 1590 and 28 of April 1591 to be processed into bar or wrought iron, and a further forty tons between the last date and 24 August 1591, and as many more tons that he may spare, for which he is entitled to receive one ton of processed wrought iron for every three tons of sow iron provided.<sup>114</sup> He is also ordered to deliver another 120 tons from 29 September 1591 for each of the next two years to be processed and allocated in the same way and John Morley is to ensure that Martin's sow iron, which would be presumably manufactured in the furnace originally owned by Relfe and Darrell, is processed first in the New Forge. This strongly suggests that Morley was processing iron in the New Forge from another furnace also, perhaps the so-called Old Furnace which is referred to later.

Another Bute document dated 1590 describes the same agreement between Robert Martin and John Morley where the latter agrees to ensure that the 120 tons of sow iron

provided by the former is processed first in his forge.<sup>115</sup> This quantity was expected to yield eighty tons of wrought iron which would then be equally divided between them (the document states that three tons of sow iron produces two tons of wrought iron). This means that both Martin and Morley would expect to receive around £400 each for the sale of their forty tons of wrought iron less, of course, the expense of refining in the forge. While Morley agreed to pay for the charcoal, the wages of the founder, the casting of all the hammers, anvils and plates and the processing of the sow iron into wrought iron, Robert Martin agreed to supply, and also incurred the expense of, the original sow iron which in the period 1585 to 1595 is reported to have been around £2 to £3 per ton.<sup>116</sup> Allowing for the initial seven tons of wrought iron which John Morley had agreed to give to Robert Martin (which equates to 10.5 tons of sow iron), it follows that from 1591 onwards the New Forge was processing a minimum of 171.5 tons of sow iron for this action alone. The output of both the New and Old Forges, is likely to have been substantial and exceeded the well documented output of the Panningridge furnace in Sussex which produced up to 240 tons per year by 1563.<sup>117</sup>

### **The Dispute between John Ramesden and Bartelmew Mascall**

Another Bute document, previously unreported and dated 8 September 1589, describes the role of John Morley and Thomas Meneffee in yet another dispute this time between John Ramesden and Bartelmew Mascall, who are both thought to be ironmasters, concerning a sum of money owed and the tools and implements required to produce cast or sow iron at a furnace called the Old Furnace using iron ore and marl taken from the Garth Mine.<sup>118</sup> In this complicated dispute, where John Morley is the adjudicator, John Ramsden owed Bartelmew Mascall £120 19s. 8d. for various unspecified items or allowances which had been documented by Thomas Meneffee and John Morley on 8 March 1589 but not yet paid. In turn, Bartelmew Mascall owed money to a William Yeman of Bristol (possibly for items related to the iron works), and in his judgement, Morley orders John Ramesden to pay off Mascall's debt out of the money he was owed but if he did not do so within six days he was obliged to pay the whole sum then to Mascall. John Ramesden is also made liable for the rent owed by Mascall to Harry Mathew for the use of the old furnace together with its grounds and houses and also the mine at the Garth all dating from the previous Michelmas (presumably the 11<sup>th</sup> October 1588) excepting rent that Mascall had already agreed to pay. The Harry Mathew mentioned here is almost certainly Henry Mathew, the younger brother and heir of William Mathew of Radyr, and the old furnace referred to here was located at Pentyrch.<sup>119</sup> This suggests that Mascall may have been operating the furnace perhaps in an ad hoc fashion for almost a year. Morley also orders that Bartelmew Mascall should be free to operate (or blow) 15 foundies (each a six day production campaign more usually referred to as foundays) at the furnace and be able to use all the necessary tools and implements for making the iron. He was also to have access to as much ore and marl as was needed to be taken from the Garth mine belonging to Harry Mathew.

Morley further awards that Bartelmew Mascall should be allocated one of the houses near the furnace for himself and his workmen together with pasture for his two horses in the furnace grounds until the feast of All Saints (1 November 1590) by which time he would have completed his operation. At this time, Bartelmew Mascall is ordered to return to all the tools and implements he had used in the processing of cast iron to John Ramesden. In a further part of the award by John Morley, John Ramesden is ordered to deliver all the tools and implements belonging to the forge and one vice to Bartelmew Mascall which he apparently owned, presumably to enable him to process the cast iron perhaps into wrought iron though this is not stated. Significantly, the manuscript also says that these items 'are nott

charged to John Ramesden in the collections made between Thomas Meneffie and me the said John Morley' suggesting that they both had a financial interest in the old furnace at Pentyrch as well as their interests in the ironworks in Llanwonno.

As a result of this dispute, Mascall was allowed to blow 15 foundays at the furnace over the space of the following year (until November 1590). Each one of these 6 day campaigns would be expected to produce 7.5 tons of sow iron giving a total of 112.5 tons over 15 weeks of production worth around £270.

## **The Cost of Manufacturing Sow and Wrought Iron**

A detailed account of the cost of manufacturing sow iron in Llanwonno is described by Robert Martin in 1589.<sup>120</sup> In the process, he reveals that for each ton of sow iron, three loads of iron ore from the Garth mine were required costing twelve shillings together with three loads of charcoal costing £1 7s. 0d. and one load of limestone costing one shilling. The corresponding labour charges per ton of sow iron included 2s. 7d. for fillers, miners and founders, two shillings for clerks to attend the furnace and woods, three pence for the carriage of three loads of charcoal, and about seven pence for carpenters to attend the furnace. Adding in miscellaneous charges of about 1s. 3d., the total cost of one ton of sow iron appears to be £2 5s. 8d. in Martin's account though he makes no allowance for the depreciation of the furnace which he says cost £50 to build. Allowing for a profit margin, this figure is comparable to the selling price of £2 10s. 0d. to £3 0s. 0d. per ton reported for the furnaces in Sussex from 1584 to 1590.<sup>121</sup>

A later unpublished account, probably by Martin in 1590, discloses the cost of producing and converting 180 tons of sow iron into 120 tons of wrought iron at one of the furnaces and forges which is stated to be worth £10 per ton.<sup>122</sup> In the process described, which took 24 weeks overall, three loads of charcoal are required for the manufacture of sow iron and the same ratio for the manufacture of wrought iron which theoretically should amount to 540 and 360 loads respectively, but in the document 960 loads are specified at nine shillings per load costing a total of £432. In this account, the wages of the founder and filler together are given as £1 8s. 0d. a week, making a total of £33 12s. 0d. over 24 weeks, while those of the hammer man and finer are £120 implying they were paid together at the rate of £5 per week. Other labour charges included the clerks' wages at £74 and the carpenters' wages at £20. Additional charges of £4 were added for 'heaping the charcoal', £50 for a 'rydyng' charge which possibly covers the carriage of the raw materials or disposal of slag and finally transport costs of one shilling per mile for each ton of sow iron carried from the furnace to the forge which came to £45.

The overall cost of manufacture is given as £824 17s. 0d. for 120 tons of wrought iron but no mention is made of the cost of iron ore or limestone for the initial production of sow iron. As the cost of charcoal is the same in this document as that given in the earlier account by Martin at nine shillings per load, it can be assumed that the other raw materials would be a similar price also. It follows that 180 tons of sow iron would require 540 loads of iron ore at £108 (four shillings per load) plus the cost of limestone at £9 (one shilling per ton of sow iron). Overall these calculations suggest that the actual cost of manufacturing wrought iron would be £941 17s. 0d. excluding an amount for the depreciation of the forge hammer which according to Martin cost £120 to construct. The selling price of wrought iron from the forge is stated to be £10 per ton and comparable to the price of £10 in Sussex in 1584-95.<sup>123</sup> Overall, therefore, the forge would be expected to generate a very healthy profit of around



£258 over a twenty four week campaign. It seems likely that over a whole year, therefore, the output of the furnace described would amount to 360 tons allowing for a four week period for maintenance which would include possibly re-building and the re-lining the furnace walls. The manufacture of 120 tons of wrought iron took twenty four weeks overall implying that the furnace produced, and the forge consumed, 7.5 tons of sow iron to generate 5 tons of wrought iron per week.

## **The Location of the Ironworks**

The precise locations of the two forges and blast furnace are not known with any certainty. In the seventeenth century, the parish of Llanwonno (then called Llanwynno) was composed of four hamlets, Glyn-Connon (Glyn Cynon), Hafod Ddraenog, Llanwonno and Penrhys<sup>124</sup>, but by the mid-nineteenth century only two remained.<sup>125</sup> In Morley's time, it is thought that Glyn Cynon extended from Mountain Ash to the river Taff, covering the area from Mynydd Merthyr west to the river Clydach near Ynysybwll, while Hafod Dreiniog extended westward from the river Ffrwd to the Rhondda Fach and included Ynysybwll. The Llanwonno hamlet probably covered the area of the village and its surrounds to the Rhondda Fach while Penrhys hamlet covered the area between the rivers Rhondda and Rhondda Fach.

From the 1560s onwards in Glamorgan, wrought iron was made using the so-called two stage process. In the first stage, the iron ore was smelted into ingots of cast iron which were referred to as sow iron if their weight was greater to or equal than 10 cwts, or pig iron if their weight was below.<sup>126</sup> The charcoal used as the reductant was preferentially derived from oak and elm and mixed with mine or marl containing the haematite or iron ore. The resulting iron was high in carbon content and impurities, very brittle, and could be cast directly into moulds to make ordinance, such as cannon and household items such as stoves and hollow ware. In the forge, the cast iron ingots were changed into wrought iron by reheating and subjecting the hot, malleable metal to repeated blows of the heavy forge hammer, to expel the excess carbon and impurities by oxidation. However, because both parts of the manufacture used water as the driving force for the bellows, a separation of the furnace and the forge was necessary as they both required separate water wheels for the blast production, one for the furnace, and one each for the finery, re-heating hearth (chafery) and power hammer. Consequently, the forge was almost always erected at a different place to the furnace, which, if the same river supplied the water power was frequently lower downstream, where a greater volume of water was available.<sup>127</sup> Additionally because both the furnace and forge required a large supply of charcoal, it was necessary to place them considerable distances apart in heavily wooded areas.

In the dispute between John Ramesden and Bartelmew Mascall, John Morley states that the mine which supplied the Old Furnace at Pentyrch in Llantrisant with haematite ore was sourced from the nearby Little Garth mountain which was a well established source of haematite probably dating back to Roman times. Furthermore, in Martin's evaluation of the costs of making sow iron<sup>128</sup>, he states that that 'iij greate lodes of Garthe mine wyll make a tonne of sows' suggesting that if the typical furnace of the era produced 360 tons of sow iron per annum (see above), at least 1000 tons of haematite ore would need to be transported to stock the furnace. While it is possible that the iron ore for the furnace in Llanwonno may have originated from the Garth mine, the transportation distance of least 14 miles between them coupled with the very large tonnage required suggests that this is unlikely. Indeed, it seems most blast furnaces of this era were located as close as possible to the source of the iron ore notwithstanding the absolute necessity of having a powerful water source nearby to

power the bellows and a large source of charcoal for the chemical reduction of the iron oxide. Accordingly, it seems that the source of iron ore for the furnace in Llanwonno may have not originated from the Garth but from a nearer alternative source perhaps from the two eponymous hamlets which were clearly defined areas of the parishes of Merthyr and Llanfabon in the 1660 Hearth Tax assessment.<sup>129</sup> The whole Merthyr area is known to have contained large deposits of iron ore, for example, Lewis reports in 1833 that veins of argillaceous iron-ore penetrated the local mountains to a great depth, and yielded upon average about thirty-five parts of metal out of a hundred.<sup>130</sup>

In his seminal work, Llewellyn, identified several locations in Llanwonno for the blast furnaces of the Sussex ironmasters in Elizabethan times. The investigation of some of these sites and their location has been described more recently by D. M. Rees in his book on *Mines, Mills and Furnaces: An Introduction to Industrial Archaeology in Wales*.<sup>131</sup> Llewellyn positions one blast furnace at the Dyffryn or Aberpennar Mill, which was situated within a short distance of Dyffryn House (now demolished) near Mountain Ash. Large heaps of blast furnace cinder were still present at the Mill in 1863 and the position of the furnace on the Aberpennar brook suggested that water power was used to work the blowing machinery.<sup>132</sup> He locates a second blast furnace at Cwmaman near the confluence of two streams. It was built of sandstone, lined with the same material, there was evidence a waterwheel, and he gave details of the dimensions of the furnace in plan and section.<sup>133</sup> However, Schubert has suggested that this furnace, remains of which still exist<sup>134</sup>, was constructed in the seventeenth century based on details of the geometry.<sup>135</sup> Llewellyn identified a third furnace at Pontyryn (now Pont Rhun, opposite Troedyrhiw), which he says lay about two miles north of Pont-y-Gwaith and opposite the then site of the Plymouth furnaces, which was being undermined and carried away by the river at that time.<sup>136</sup> This furnace has been confused with another of the same era by both Schubert<sup>137</sup> and Rees<sup>138</sup>, who erroneously place the Pontyryn furnace at Abercanaid. However, the only established furnace in this area (not reported by Llewellyn) was excavated in 1965 and located at Blaencanaid, about a mile west of Abercanaid.<sup>139</sup> Llewellyn identifies the possible site of yet another blast furnace on the river Rhondfa Fach (perhaps near Pontygwaith on the river Rhondda Fach), but at that time he says the hearth had been removed and the works rendered a shapeless ruin.<sup>140</sup> One caveat should be added to this discussion; none of the Chancery documents transcribed by Llewellyn provide support for any of the above locations as the site of Morley's blast furnace. Llewellyn's evidence, although invaluable, is entirely circumstantial and based on his observations which were made at least 200 years after the Elizabethan furnaces had ceased production.

In the conversion of sow iron into wrought iron, Martin refers to a typical transport charge of £45 for carrying 180 tons of sows five miles from the furnace to the forge at one shilling per ton for each mile.<sup>141</sup> This would seem to suggest that a clear separation of furnace and forge was essential to ensure that each had a reasonable supply of charcoal. By inference, therefore, if indeed Morley's furnace was located either at the site of the Dyffryn Mill or at Pontyryn, the two forges were probably located higher up or further down the river Cynon or river Taff. Rees's claim that the Old Forge was located at Pontygwaith on the river Rhondda Fach<sup>142</sup> (near Tylorstown) is erroneous as he has confused the site of the forge with that of the furnace which possibly existed there. Llewellyn certainly identifies a forge at Pontygwaith<sup>143</sup> (now Pont-y-Gwaith), but he says this lay south of the Pontyryn Furnace on the river Taff and a short distance above the viaduct which carried the Aberdare extension of the Merthyr Cardiff railway at that time. A large quantity of forge cinders were found there and apparently reprocessed in the 1820s. There seems little doubt that an ironworks existed at this site<sup>144</sup> as the existing stone bridge was built over the Taff in 1811 to replace the ancient

wooden structure.<sup>145</sup> Indeed the name of the hamlet of Pont-y-Gwaith is thought to mean ‘bridge of the ironworks’. Llewellyn discusses the sites of several other forges including that at Llywcoed, near Aberdare, which he thought was supplied by the furnace at Cwmaman<sup>146</sup>, but given Schubert’s reservation over the date of its construction, the forge may have been supplied alternatively either by the Dyffryn furnace or the one at Blaencanaid which were much nearer. Significantly, Llewellyn also refers to a forge at Cwm Cynon farm where he identified the remains of a water course from the river Cynon which he thought had powered the forge wheel, together with the appearances of an old forge pond. Large deposits of cinder were found here, and although the current location of the forge cannot be pinpointed precisely, it seems highly likely that it lay between the hamlets of Penrhiwceiber and Tyntetown but on the eastern side of the river.

In one of the most important Bute documents, the Old Forge is clearly described as being located in Glyn Cynon.<sup>147</sup> Confusingly, the same document also states that the Old Forge was located in Llanwonno though this reference is thought here to relate to the parish rather than to the hamlet.<sup>148</sup> The fact that the tenements owned by Anthony Morley, called New Town, probably lay at the location of the eponymous village near Mountain Ash also suggests that the Old Forge lay near here. However of the two forges positively identified in the Cynon valley, that at Llywcoed is not the one referred to in the Bute papers as it almost certainly lay in the parish of Aberdare. The other forge at Cwm Cynon, is the most likely as it lay a few miles south of the Dyffryn furnace and a mile or so from Morley’s tenements. The possibility that this was also the forge originally owned and sold by William Mathew of Radyr to Sir Henry Sidney in 1565 cannot be discounted,<sup>149</sup> but the distance of at least twelve miles between Cwm Cynon and his furnace at Pentyrch makes this suggestion rather unlikely, but not impossible, given that the pig or sow iron was carried by large mule trains at this time.

The same Bute document<sup>150</sup> discloses that the New Forge, on the other hand, was “sett and beinge within the p[ar]lishe of llanwono” though Rees erroneously states that it was located in Glyn Cynon.<sup>151</sup> Given that both forges needed water power to operate the bellows, and that the Old Forge clearly lay in Glyn Cynon, it is suggested that the New Forge was possibly located on the River Taff at Pont-y-Gwaith. In the original petition by John Watkis and Bridget (formerly Morley) against Elizabeth Meneffee, it is stated that Anthony Morley ‘was also possessed of one [ir]on worke or forge and of an iron fornace & of a third p[ar]t of an iron forge lying in the p[ar]lishes of Lanwynoe and M’thyr Tydvill’.<sup>152</sup> Because the bridge at Pont-y-Gwaith defines the boundary between the two parishes, it is possible that the petition was referring to this forge as lying in Merthyr Tydfil. If this was the site of the New Forge, it suggests that Morley’s furnace lay at Pontyrn rather than at the Dyffryn Mill. If this scenario is correct, both forges would have been located three to five miles distant from the furnace at Pontyrn and well separated to ensure a good supply of charcoal. Schubert reports that by 1625, both the furnace at Pontyrn and forge at Pont-y-Gwaith were apparently operated by Thomas Erbury of Merthyr.<sup>153</sup>

Sadly, there seems little doubt that the extensive iron making in the parish of Llanwonno from the 1570s onwards resulted in a destruction of the indigenous forest running from Aberdare and Merthyr in the North, through the hamlet of Llanwonno, south to Llanfabon, leaving a burnt-out and blackened landscape in its place as the anonymous sixteenth century poem *Coed Glyn Cynon* recalls.<sup>154</sup> The only tangible remains of the old furnaces and forges in Llanwonno may be the decorative fire-backs described by Llewellyn, one inscribed with the date 1579 and another with the date 1629, which he suggests were cast

at the Pontyryn ironworks.<sup>155</sup> It is thought that the original furnaces and forges in Llanwonno were eventually taken over by Anthony Lewis of Troedyrhiw and Henry Cook of Tir Cook. According to Llewellyn, because the former was a royalist supporter, the works were destroyed by Cromwell's soldiers around 1645 during the Civil War and a few others in Sussex whose owners supported the royalist cause also suffered the same fate.<sup>156</sup>

It is not known what became of the early Sussex ironmasters who had settled in Glamorgan as no other records of the ironworks have been discovered. Llewellyn suggested that the descendants of Anthony Morley, for example, remained in Glamorgan with some members of the family in the eighteenth century connected to the old furnace at Melincourt, in the Vale of Neath while others could be found in the Taff Valley. This appears to be confirmed by presence of several Morleys in the parish registers for Cadoxton Juxta Neath from 1726 onwards.<sup>157</sup> An analysis of the Glamorgan hearth tax assessment of 1670 indicates that the population of the county at that time was approximately 45,000 of which around 840 people lived in the parish of Merthyr Tydfil, 370 lived in the parish of Llanfabon, 605 lived in the parish of Aberdare and 770 lived in the parish of Llanwonno (based on a figure of five persons per habitation).<sup>158</sup> Of the ironmasters who were present in the county in the 1570-90 period, no descendants of the families of Morley, Relfe, Darrell, Meneffe, Cheney, Hobson, Cavell or Watkys are named in the 1670 assessment.<sup>159</sup> This suggests that their families had either returned to Sussex or to another county, sometime before or after Cromwell had razed the Glamorgan ironworks to the ground, or their name was lost through marriage. Alternatively, it is possible that their surnames have been hidden under the household entries in the assessment as some simply record the owner of the house. For example, in the 1670 assessment, the entries for two households in the parish of Llanwonno read 'Gwenllyan Lewis & ten<sup>ts</sup>.' and 'M<sup>rs</sup>. Mary Wms. & ten<sup>ts</sup>.' where the tenants names are not disclosed. It has also been suggested that a significant proportion of local populations were never recorded in the hearth tax assessments.<sup>160</sup> In contrast, the names of Waters and Martin are present in the 1670 assessment suggesting that they at least may have been descendants of the original ironmasters.

## **Conclusion**

This article has reviewed the role that the Sussex ironmasters exerted on the development of the iron industry in Llanwonno in the sixteenth century and has attempted to correct errors and ambiguities in earlier studies. It has been shown that Anthony Morley was a well-educated ironmaster who moved from Sussex to Glamorgan around 1580 after his second marriage. He acquired the ironworks belonging to William Relfe about 1582 but his business was not successful and he was made bankrupt probably in 1585 or 1586. Shortly afterwards he died, and there seems little doubt that a commission led by Sir Edward Stradling, either unintentionally or deliberately, underestimated the value of his assets which were sold to Thomas Meneffee to satisfy his creditors. As a consequence of this action, and following Meneffee's death around 1589, several acrimonious disputes erupted over the ownership of the ironworks, land and property, which he had purchased from Morley. All of these assets subsequently transferred to Robert Martin of Aberdare following his marriage to Meneffee's widow. Actions were pursued *inter alia* by John Watkis, who had married Morley's widow, against the commissioners for undervaluing Anthony Morley's assets; by Robert Martin against Constance Relfe and her new husband, James Hobson, for failing to supply the crucial documentation for the assets that Meneffee had originally purchased; and by John Morley, who claimed the ownership of the New Forge from Martin. Finally, this account has attempted to locate the positions of the furnace and forges which were operating at this time in Llanwonno and concluded

that Morley's furnace was either at Pontyryn or Mountain Ash with the two forges at Cwm Cynnon and Pont-y-Gwaith. There seems little doubt that the scale of iron manufacture in Llanwonno was substantial and the operation was clearly viable producing sow iron at a cost that compared favourably to that found in the Sussex Weald.

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<sup>4</sup> Hammersley, *op. cit.*, 603-05. Cleere and Crossley, *op. cit.*, 287.

<sup>5</sup> This figure is taken from Hammersley's estimate of 52 furnaces in the Weald in 1570-9 (*op. cit.*, 595) multiplied by an average output of 200 tons per year (*op. cit.*, 600).

<sup>6</sup> Estimated by the author from Reference 4 where one load of charcoal is equivalent to around 3 cords of wood. The value quoted is based on a density of around 0.6 for wood and using the conversion factor: 1 cord = 3.62 m<sup>3</sup>.

<sup>7</sup> Schubert, *op. cit.*, 176-9.

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- <sup>52</sup> NLW, 'The Bute Estate Archives', C7/1 (1591). Note that further references to this manuscript refer to twenty four sheets (photocopies) as supplied by the NLW which have been numbered in sequence. Note, however, that this is not the sequence in the existing manuscript at the NLW. While pp. 1-16 of the file lie in the correct sequence, part of the original file was sewn together in the wrong order so that pp. 19-22 make up a single page and pp. 23-24 and pp. 17-18 another. I thank Mr. Stephen Benham of the Department of Collections at the NLW for bringing this ambiguity to my attention.
- <sup>53</sup> NLW, Bute C7/1, 3-4; NLW, Bute C7/1, 11.
- <sup>54</sup> NLW, Bute C7/1, 8.
- <sup>55</sup> Data from the International Genealogical Index.
- <sup>56</sup> NLW, Bute C7/1, 11.
- <sup>57</sup> NLW, Bute C7/1, 7-8.
- <sup>58</sup> According to D. John, *Cynon Valley Place-Names*, (Llanrwrst, 1998), the earliest date recorded for Newtown is the year 1871 and that entry relates to the school opened there that year. John goes on to say 'Newtown was built on the land of Troedrhiw Forest and Fforest Uchaf'. I am grateful to Mr. Geoff Evans of the Cynon Valley History Society for bringing this to my attention.
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- <sup>101</sup> ESRO, 'Archive of the Dobell and Lane Families', Ref.: Arlington: SAS-M/1/29 (20 November 1584); SAS-M/1/686 (1 September 1584).
- <sup>102</sup> WSRO, 'The Goodwood Estate Archives', Ref.: Goodwood /E288 -E300.
- <sup>103</sup> ESRO, 'Archive of the Pelham Family of Stanmer, Earls of Chichester', Ref. : SAS/A17 (1 Jan 1552); SAS/A1 (22 Oct 1554).
- <sup>104</sup> Bindoff, *op. cit.*, Vol. II.
- <sup>105</sup> The National Archives, 'The Will of John Morley of Lewes, Sussex' (18 May, 1565), Ref.: Prob 11/48.
- <sup>106</sup> NLW, Bute C7/2.
- <sup>107</sup> The text of NLW Bute Estate Archives, Ref.: C7/2, p.2, is not entirely clear but appears to state that Meneffee had paid for: 'ij iiij<sup>de</sup> p[ar]tes Ciiij<sup>xl</sup> li', i.e., two third parts £(100 + 4 x 40) or £260.
- <sup>108</sup> NLW, Bute C7/1, 15.
- <sup>109</sup> NLW, Bute C7/1, 10.
- <sup>110</sup> The National Archives, Chancery Proceedings, Ref.: C 2/Eliz/A2/50.
- <sup>111</sup> National Library of Wales, 'The Bute Estate Archives', Ref.: C6/1 (1590).

- <sup>112</sup> NLW, Bute C6/4.
- <sup>113</sup> Cleere and Crossley, *op. cit.*, 284.
- <sup>114</sup> NLW, Bute C6/4.
- <sup>115</sup> NLW, 'The Bute Estate Archives', Ref.: C6/3 (1590).
- <sup>116</sup> Cleere and Crossley, *op. cit.*, 85.
- <sup>117</sup> *Ibid*, 131.
- <sup>118</sup> NLW, 'The Bute Estate Archives', Ref.: Bute C/5 (1589).
- <sup>119</sup> See Riden, 'Early Ironworks in the Lower Taff Valley', *op. cit.*, 70-81; Davies and J.G. Owen, *op. cit.*, 4-6.
- <sup>120</sup> NLW, Bute C7/2, p. 3. The sum of £2 5s 8d calculated by the author excludes the additional charges for making wrought iron from sow iron which required a further three loads of charcoal, the wages of a clerk, hammer man and finer.
- <sup>121</sup> Cleere and Crossley, *op. cit.*, 285.
- <sup>122</sup> NLW, 'The Bute Estate Archives', Ref.: C6/2 (undated).
- <sup>123</sup> Cleere and Crossley, *op. cit.*, 284.
- <sup>124</sup> E. Parkinson (ed.), *The Glamorgan Hearth Tax Assessment of 1670*, South Wales Record Society, Publication No. 10, (Cardiff, 1994).
- <sup>125</sup> This information is disclosed by J. G. Davies on the website of St. Gwynno's Church at Llanwonno [URL: <http://uk.geocities.com/companologywales/llanwynno.html>].
- <sup>126</sup> Schubert, *op. cit.*, 159-61.
- <sup>127</sup> *Idem, Ibid*.
- <sup>128</sup> NLW, Bute C/7, 2.
- <sup>129</sup> Parkinson, *op. cit.*, lxvi, lxvii.
- <sup>130</sup> See the entry for Merthyr Tydfil in S. Lewis, *A Topographical Dictionary of Wales*, (London, 1833).
- <sup>131</sup> D. M. Rees, *Mines, Mills and Furnaces: An Introduction to Industrial Archaeology in Wales*, (London, 1969), pp. 52-6.
- <sup>132</sup> Llewellyn, *op. cit.*, 86.
- <sup>133</sup> Llewellyn, *op. cit.*, 86-8.
- <sup>134</sup> D. M. Rees, *op. cit.*, 253; Ordinance Survey (OS) map ref.: ST 004992.
- <sup>135</sup> Schubert, *op. cit.*, 373.
- <sup>136</sup> Llewellyn, *op. cit.*, 89.
- <sup>137</sup> Schubert, *op. cit.*, 176.
- <sup>138</sup> Rees, *op. cit.*, 258.
- <sup>139</sup> D.M. Rees, (*op. cit.*, p. 55), OS map ref.: SO 035042. He reports that a limited excavation of the site was carried out by D. M. Evans of the Department of Archaeology, University College, Cardiff, in July 1965.
- <sup>140</sup> Llewellyn, *op. cit.*, 92.
- <sup>141</sup> NLW, Bute C6/2.
- <sup>142</sup> Rees, *op. cit.*, 252.
- <sup>143</sup> Llewellyn, *op. cit.*, 89.
- <sup>144</sup> D. M. Rees, *op. cit.*, 256; Ordinance Survey (OS) map ref.: ST 079979.
- <sup>145</sup> See the entry for Pont-y-Gwaith in *Wikipedia* [URL: <http://en.wikipedia.org/wiki/Pont-y-gwaith>].
- <sup>146</sup> Llewellyn, *op. cit.*, 88.
- <sup>147</sup> NLW, Bute C7/1, 6.
- <sup>148</sup> NLW, Bute C7/1, 9.
- <sup>149</sup> Davies and Owen, *op. cit.*, 6.
- <sup>150</sup> NLW, Bute C6/4.
- <sup>151</sup> Rees, *op. cit.*, 256.
- <sup>152</sup> The National Archives, Chancery Proceedings, Ref.: C 2/Eliz/M6/53. For a transcription, see Llewellyn, *op. cit.* 107.
- <sup>153</sup> NLW, Bute M37/39 (1625); see Schubert, *op. cit.*, 176.

<sup>154</sup> For a translation of the sixteenth century poem, see [URL:

<http://www.britannia.com/wales/lit/lit10.html>].

<sup>155</sup> Llewellyn, *op. cit.*, 89-91.

<sup>156</sup> Llewellyn, *op. cit.*, 106-111.

<sup>157</sup> West Glamorgan Archive Service (Swansea); Parish Register for St. Catwg's Church, Cadoxton Juxta Neath; Baptism, Marriage, and Burial index 1738-1834; Bishop's Transcripts 1721-1837. The Morleys present in Cadoxton at this time are thought to have migrated from nearby Carmarthenshire and are not related to those from Sussex.

<sup>158</sup> Parkinson, *op. cit.*, xlv, xlv, lix and lxvii.

<sup>159</sup> *Ibid*, 156-213.

<sup>160</sup> N. Allridge (ed.), *The Hearth Tax: Problems and Possibilities*, (Hull, 1983).